Contents

NUMBER 1, MARCH 1988

A. J. PARSONS, I. R. JOHNSON and J. H. H. WILLIAMS. Leaf age structure and canopy photosynthesis in rotationally and continuously grazed swards 1

A. J. PARSONS and P. D. PENNING. The effect of the duration of regrowth on photosynthesis, leaf death and the average rate of growth in a rotationally grazed sward 15

S. A. GRANT, G. T. BARTHRAM, L. TORVELL, J. KING and D.A. ELSTON. Comparison of herbage production under continuous stocking and intermittent grazing 29

J. KING, E. M. SIM, G. T. BARTHRAM, S. A. GRANT and L. TORVELL. Photosynthetic potential of ryegrass pastures when released from continuous stocking management 41

A. J. PARSONS, I. R. JOHNSON AND A. HARVEY. Use of a model to optimize the interaction between frequency and severity of intermittent defoliation and to provide a fundamental comparison of the continuous and intermittent defoliation of grass 49

S. PEEL, E. A. MATKIN AND C. A. HUCKLE. Herbage growth and utilized output from grassland on dairy farms in southwest England: case studies of five farms, 1982 and 1983. I. Herbage growth 61

S. PEEL, E. A. MATKIN AND C. A HUCKLE. Herbage growth and utilized output from grassland on dairy farms in southwest England: case studies of five farms, 1982 and 1983. II. Herbage utilization 71

A. R. G. WYLIE AND R. W. J. STEEN. Effect of anhydrous ammonia treatment on the chemical composition and nutritive value of grass hay and on intake and performance in beef steers 79

J. A. ROOKE, F. M. MAYA, J. A. ARNOLD AND D. G. ARMSTRONG. The chemical composition and nutritive value of grass silages prepared with no additive or with the application of additives containing either *Lactobacillus plantarum* or formic acid 87

R. COX, T. W. PARR AND R. A. PLANT. Water use and water-use efficiency of perennial ryegrass swards as affected by the height and frequency of cutting and seed rate 97

NUMBER 2, JUNE 1988

R. S. SHIEL and J. C. BATTEN. Redistribution of nitrogen and phosphorous on Palace Leas meadow hay plots as a result of aftermath grazing 105

S. CHRISTIANSEN and T. SVEJCAR. Grazing effects on shoot and root dynamics and above- and below-ground non-structural carbohydrate in Caucasin bluestem 111

C. T. DOUGHERTY, E. M. SMITH, N. W. BRADLEY, T. D. A. FORBES, P. L.

CORNELIUS, L. M. LAURIAULT and C.D. ARNOLD. Ingestive behaviour of beef cattle grazing alfalfa (*Medicago sativa* L.) 121

M. J. GIBB and M. S. RIDOUT. Application of double normal frequency destributions fitted to measurements of sward height 131

C. S. MAYNE, R. D. NEWBERRY and S. C. R. WOODCOCK. The effects of a flexible grazing management strategy and leader/follower grazing on the milk production of grazing dairy cows and on sward characteristics 137

V. P. PAPANASTASIS and P. H. KOUKOULAKIS. Effects of fertilizer application to grasslands in Greece 151

D. A. DAVIES and T. E. H. MORGAN. Variation in spring temperatures, grass production and response to nitrogen over twenty years in the uplands 159

D. I. H. JONES. The effect of cereal incorporation on the fermentation of spring- and autumn-cut silages in laboratory silos 167

K. LARSSON and E. STEEN. Changes in mass chemical composition of grass roots during decomposition 173

R. E. FALLOON and D. E. HUME. Productivity and persistence of prairie grass (*Bromus willdenowii* Kunth). 1. Effects of the head smut fungus *Ustilago bullata* Berk. 179

A. HOPKINS, JOANNE WAINWRIGHT, P. J. MURRAY, P. J. BOWLING and MORAG WEBB. 1986 survey of upland grassland in England and Wales: changes in age structure and botanical composition since 1970–72 in relation to grassland management and physical features 185

R. J. ORR, A. J. PARSONS, T. T. TREACHER and P. D. PENNING. Seasonal patterns of grass production under cutting or continuous stocking managements 199

J. R. B. TALLOWIN and S. K. E. BROOKMAN. Herbage potassium levels in a permanent pasture under grazing 209

NUMBER 3, SEPTEMBER 1988

J. FRAME. Idris V. Hunt (An Appreciation) 213

C. J. C. PHILLIPS. The use of conserved forage as a supplement for grazing dairy cows (Review Paper) 215

G. W. MATHISON, H. G. JAHN, P. D. WALTON and L. P. MILLIGAN. Use of the *in situ* technique in the study of degradation of lucerne and smooth bromegrass genotypes 231

E. S. KRISTENSEN. Influence of defoliation regime on herbage production and characteristics of intake by dairy cows as affected by grazing intensity 239

C. A. MARRIOTT. Seasonal variation in white clover content and nitrogen fixing (acetylene reducing) activity in a cut upland sward 253

ANNE RANGELEY. Fertilizer requirements for maintenance of a perennial ryegrass (*Lolium perenne* L.)/white clover (*Trifolium repens* L.) pasture growing on a humus iron podzol in N.E. Scotland 263

R. J. STEPHENSON and G. L. POSLER. The influence of tall fescue on the germination, seedling growth and yield of birdsfoot trefoil 273

R. A. BYERS and W. C. TEMPLETON JR. Effects of sowing date, placement of seed, vegetation suppression, slugs, and insects upon establishment of no-till alfalfa in orchardgrass sod 279

G. MOSELEY, E. L. JONES and V. RAMANATHAN. The nutritional evaluation of Italian ryegrass cultivars fed as silage to sheep and cattle 289

G. SWIFT, A. T. CLELAND and M. F. FRANKLIN. A comparison of nitrogen fertilizers for spring and summer grass production 295

S. McHUGH, M. O. HUMPHREYS, T. McNEILLY and M. S. JOHNSON. Variation in cold tolerance in *Festuca rubra* L. 303

A. H. MARSHALL and I. R. JAMES. Effect of plant density on stolon growth and development of contrasting white clover (*Trifolium repens*) varieties and its influence on the components of seed yield 311

ANNE-MARIE BAKER, A. YOUNGER and J. A. KING. The effect of drainage on herbage growth and soil development 317

P. M. HAIGH. The effect of wilting and silage additives in the fermentation of autumn made grass silage ensiled in bunkers on commercial farms in South Wales 1983–85 335

A. S. LAIDLAW. The contribution of different white clover cultivars to the nitrogen yield of mixed swards (Research Note) 345

Book review 349

NUMBER 4, DECEMBER 1988

C. T. DOUGHERTY, T. D. A. FORBES, P. L. CORNELIUS, L. M. LAURIAULT, N. W. BRADLEY and E. M. SMITH. Effects of supplementation on the ingestive behaviour of grazing steers 353

ANNE RANGELEY. The utilization of N fertilizer, applied to perennial ryegrass/white clover pasture growing on a humus iron podzol in N.E. Scotland 363

D. J. MOWAT and M. A. SHAKEEL. The effect of pesticide application on the establishment of white clover in a newly-sown ryegrass/white clover sward 371

G. B. GREENWOOD and M. W. DEMMENT. The effect of fasting on short-term cattle grazing behaviour 377

M.B. McGECHAN. Susceptibility to losses during mechanical silage and haymaking operations in relation to grass dry matter content 387

G. A. JUNG, J. A. SHAFFER, W. L. STOUT and M. T. PANCIERA. Harvest frequency effects on forage yield and quality of rapes and rape hybrids 395

D. J. MOWAT and M. A. SHAKEEL. The effect of some invertebrate species on the growth of white clover (*Trifolium repens* L.) in the laboratory 408

M. J. HILL and A. C. GLEESON. Competition among seedlings of phalaris, subterranean clover and white clover in diallel replacement series mixtures 411

D. R. JONES and ALISON DAVIES. The effects of simulated continuous grazing on development and senescence of white clover 488

M. S. SABRI and D. J. ROBERTS. The effects of feeding fodder beet with two levels of concentrate allocation to dairy cattle 427

C. E. LASCANO and D. THOMAS. Forage quality and animal selection of *Arachis pintoi* in association with tropical grasses in the eastern plains of Colombia 433

M. S. DHANOA. On the analysis of dacron bag data for low degradability feeds (Research Note) 441

Book review 445

Author index for Volume 43 547